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Software Defined Network

S.SANTOSHI
B.Tech Student, Department of CSE
Sphoorthy Engineering College, Nadergul(Vill)
Sagar Road, Saroonagar(Mdl),R.R Dist.T.S.

T.SOMA SHEKAR
Associate Professor, Department of CSE
Sphoorthy Engineering College, Nadergul(Vill)
Sagar Road, Saroonagar(Mdl),R.R Dist.T.S.

J.DEEPTHI
HOD CSE, Department of CSE
Sphoorthy Engineering College, Nadergul(Vill)
Sagar Road, Saroonagar(Mdl),R.R Dist.T.S

Abstract: **Software attempts to build a computer network by separating it into two systems , the first system is the control plane which provides performance and fault management via NetFlow , IP fix , SNMP and other protocols . SDN was created in response to demands from large data centers , who found problems with coping with very unpredictable traffic patterns these patterns could be have very high demand for existing network infrastructure , hence SDN is ideal for customers who have rapid changes in their day to day network load such as social networking sites , search engines , large data centers which have geographically dispersed resources and workload in specific locations .**

SDN has a key protocol called OpenFlow ,the data path of an OpenFlow Switch presents a clean flow table abstraction; each flow table entry contains a set of packet fields to match, and an action (such as send-out-port, modify-field, or drop). When an OpenFlow Switch receives a packet it has never seen before, for which it has no matching flow entries, it sends this packet to the controller. The controller then makes a decision on how to handle this packet. It can drop the packet, or it can add a flow entry directing the switch on how to forward similar packets in the future., provides a way to control the behavior of switches through the networking dynamically and programmatically.

I. INTRODUCTION

software defined network is an architecture or approach of computer networking which aims to make the network open and programmable this approach is useful for organizations that requires a specific type of network behavior it can develop or install an application to do what it needs, these applications may be for common networking functions such as traffic engineering , security and QOS and so on.

At the core of SDN is creating an environment where this kind of flexibility exist and the network can evolve at the speed of software.

The SDN model analogous to operating system ,for the SDN model the networking operating system(NOS) acts as the middle layer this is also commonly called the SDN controller.

The NOS will typically have core services such as interfacing with network nodes ,provide a programmable interface to the network applications .

On the south side of SDN model we have forwarding devices ,these devices receive packets take actions on packets and update counter , actions taken on the packets include dropping the packet , modifying the packet header and sending packet out a single port or out multiple packet .

Instructions of how to handle a packet are given by the SDN controller and similar to the OS model on the north side of SDN model we have networking applications .

II. WORKING OF SDN

SDN attempts to build a computer network by separating it into two systems , first system is the control plane which provides performance and fault management via NetFlow , IP fix , SNMP and other protocols.

When a host attempts to communicate with another host over SDN network , the first packet from the client involved with new flow are used to determine whether or not a forwarding decision can be made locally by the switch or it needs to ask the controller about the decision .

A switch can also notify the controller of when the flow is no longer active , it will be removed from the table maintained by the controller.

III. COMPONENTS REQUIRED

1.control plane/controller : It handles configuration management of SDN compliant devices and understands network topology . It can process connection requests based on requirements such as QOS and also perform link management between devices .

Control plane configures connection paths or flows into the data plane through the use of a control protocol , control protocol is used for important functions such as connection setup.

2.Data plane: It is responsible for forwarding the traffic to the selected destination switch can either

be reliant on the control to make the forwarding decision or make decisions on its own.

If the switch determines that it must ask the controller it will do so via a secure channel using the control protocol .

The controller decides if the flow should be granted , this decision is based on policies within the controller when a flow is granted details regarding it are entered in the controller's connection table now the controller can send instructions to the switches in the best path selected along the dahen the flow would be directed through the network.

IV. ADVANTAGES AND APPLICATIONS OF SDN

1 . The ability to buy very inexpensive switches that have very little resident software and processing needs.

2. centralization of forwarding information base allows optimum routes to be calculated deterministically for each end to end flow.

3. SDN dynamically responds to application requests.

4.SDN optimizes the utilization of the network with compromising on service quality

5. SDN can filter packets as they enter the network and hence the switches act as simple firewalls.

6. SDN can redirect certain suspicious traffic flow to higher layer security such as IPS systems, Firewalls and data loss prevention devices.

7. SDN switches support the modification of packet headers will also be able to function as a simple and cost effective load balancing device.

8.SDN controllers can be clustered for fault tolerance and high availability .

V. CONCLUSION

SDN centralizes some or all of the connection requests, this centralization is beneficial because of the configuration policies of the controller, some connection requests could be dropped such as DOS attack.

The policies on the controller that are leverage to make decisions on flows can be based on range of IP address , time of the day and other characteristics . SDN also claims to solve scalability problem issues , it is unlikely that a single controller would be processing all the connection requests for all the access points on the network . This can be managed in a couple of different ways that coexist one of such approach is to break up the network into multiple control and data planes , the policies can then be synchronized across the controllers each controller still sets up connection end to end even when other data plane is involved .

Another way is to unload some of the connection processing on each controller by allowing the switch perceiving the inital connection request to make some or most portion of forwarding decision providing support for environment that are not ready to commit to the control protocol .

Traffic analysis of SDN can be done using switches and routers which are SNMP compatible and can export some NetFlow and IP fix data . Even the controller can be set up export from its connection table ensuring all details are available for network traffic analysis .

VI. REFERENCES

[1] SDN: Software Defined Networks: An Authoritative Review of Network Book by Ken Gray and Tom Nadeau

[2] Software Defined Networking (SDN): Anatomy of OpenFlow Book by Jeff Doyle and Pete Moyer

AUTHOR's PROFILE

S.Santoshi, B.Tech Student, Department of CSE, Sphoorthy Engineering College, Nadergul(Vill),Sagar Road, Saroonagar(Mdl),R.R Dist.T.S.

T.Soma Shekar, Assistant Professor, Department of CSE, Sphoorthy Engineering College, Nadergul(Vill),Sagar Road, Saroonagar(Mdl),R.R Dist.T.S.

J.Deepthi, Associate Professor & HOD, Department of CSE, Sphoorthy Engineering College, Nadergul(Vill),Sagar Road, Saroonagar(Mdl),R.R Dist.T.S

